

What is claimed is:

[Claim 1] A unit for storing at least one hard disk drive, including: two side panels mounted in parallel with each other, such that both sides of said at least one hard disk drive is in contact with a suspension system; a set of slots for a plurality of hard drives separated by dividers, said number of slots corresponding to said number of disk drives; said suspension system comprising a polymer compression member incorporated into each of said dividers; wherein each of said polymer compression members contacts each of said disk drives at said upper and lower surfaces.

[Claim 2] The unit for storing at least one hard disk drive as recited in claim 1, wherein said polymer compression member is an arched beam that is incorporated into each of said dividers.

[Claim 3] The unit for storing at least one hard disk drive as recited in claim 1, wherein said polymer springs include a material chosen from the group consisting of valox, delrin, hytrel, zytel, or noryl.

[Claim 4] The unit for storing at least one hard disk drive as recited in claim 1, wherein there is more than one set of said polymer springs said set of polymer springs made of at least two different materials.

[Claim 5] The unit for storing at least one hard disk drive as recited in claim 1, wherein said compression member is configured as a coil.

[Claim 6] The unit for storing at least one hard disk drive as recited in claim 1, wherein said compression member is configured to two linearly adjacent arches.

[Claim 7] The unit for storing at least one hard disk drive as recited in claim 1, wherein said compression member is configured as multiple arches.

[Claim 8] The unit for storing at least one hard disk drive as recited in claim 1, wherein a horizontal compression member contacts the hard drives on the upper and lower surface of the devices.

[Claim 9] The unit for storing at least one hard disk drive as recited in claim 1, further comprising at least one complementary compressive member contacting said at least one hard drive on the sides of the devices, such that they engage the sides of the hard drive.

[Claim 10] The unit for storing at least one hard disk drive as recited in claim 9, wherein said at least one complementary compressive member is mounted in the center of the slots of said side panel.

[Claim 11] The unit for storing at least one hard disk drive as recited in claim 10 wherein said at least one complementary compression member is made of a flexible polymer and has an arched structure that is attached at the ends of the beam to the side panel.

[Claim 12] The unit for storing at least one hard disk drive as recited in claim 11, wherein said polymers will act as omni-directional reactions to all forces.

[Claim 13] The unit for storing at least one hard disk drive as recited in claim 1, wherein said multiple beams are configured to have varying stiffness.

[Claim 14] A unit for storing at least one hard disk drive, including: two side panels mounted in parallel with each other, such that both sides of said at least one hard disk drive is in contact with a suspension system; a set of slots for a plurality of hard drives separated by dividers, said number of slots corresponding to said number of disk drives; said suspension system comprising at set of polymer compression members incorporated into each of said dividers; wherein each of said polymer compression members contacts each of said disk drives at said upper and lower surfaces; and wherein said multiple compression members are configured to have varying stiffness.

[Claim 15] A method for reducing the vibration in a hard disk drive using the system as recited in claim 14, including the step of configuring said multi-stiffness beams to work in unison with at least another of one of said beams.

[Claim 16] A system for housing a hard disk drive including: a first and second side panel of a housing, said second side panel mounted in parallel with the said first side panel; wherein said first and second side panels having at least one slot for including at

least one disk drive; a first set of compressive members made of a polymer, and configured such that both the top and bottom of said at least one disk drive; and a second set of compressive members made of a polymer, and configured such that both of said sides of said at least one disk drives are in contact with a set of polymer springs; wherein said at least one disk drive is held firmly in place by said first and said second set of compressive members, whereby said rotational and external vibrations are reduced.

[Claim 17] The system as recited in claim 16, further including a set of slots which are separated by dividers.

[Claim 18] The system as recited in claim 16, wherein said first polymer compression member is an arched beam.

[Claim 19] The system as recited in claim 18, wherein said multiple beams of varying stiffness will be employed.

[Claim 20] The system as recited in claim 19, wherein said multi-stiffness beams are configured to work in unison.

[Claim 21] A system for controlling vibration in a hard disk drive including: a housing with two side walls and a slot for a hard disk drive, said side walls including a horizontal compression structure made of polymer means, said stiffness of said compression structure increased through a stiffening step.

[Claim 22] The system for controlling vibration in a hard disk drive as recited in claim 21, wherein said polymer means are selected from among the group consisting of: Noryl, Lexan, Valox, Delrin, Hytrel, and Zytel.

[Claim 23] The system for controlling vibration in a hard disk drive as recited in claim 21, wherein the cross section of said compression member is matched to the expected loading of the application.

[Claim 24] The system as recited in claim 21, wherein said stiffness resulting from a change in curvature of a part.

[Claim 25] A method for reducing the vibration in a hard disk drive using the system as recited in claim 23, including the step of configuring said multi-stiffness beams to work in unison with at least another of one of said of beams.

[Claim 26] The method as recited in claim 24, wherein said load becomes more aggressive.

[Claim 27] A system for housing a hard disk drive including: a first and second side panel of a housing, said second side panel mounted in parallel with the said first side panel; wherein said first and second side panels having at least one slot for including at least one disk drive; a first set of compressive members made of a polymer, and configured such that both the top and bottom of said at least one disk drive; and a second set of compressive members made of a polymer, and configured such that both of said sides of said at least one disk drives are in contact with a set of polymer springs; wherein said at least one disk drive is held firmly in place by said first and said second set of compressive members, whereby said rotational and external vibrations are reduced.

[Claim 28] The system as recited in claim 27, wherein said multi-stiffness beams working in unison resulting in each other being recruited as the load becomes more aggressive.

[Claim 29] The system as recited in claim 27, wherein the variable stiffness can result from one beam or surface with a variable cross-section or from variable cross-section beams working in a cascading effect.

[Claim 30] The system as recited in claim 27, wherein a surface projection feature can also be used and the variability in thickness plays a greater role when the beam is loaded in compression.